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# **The Publication Trend of Internal Medicine in Iran, the Middle East and the World: A 10-Year Bibliometric Analysis**

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## **Abstract**

**Purpose:** This study sought to evaluate the scientific publications of Iranian researchers in the field of internal medicine as well as to compare them with those of the countries of the Middle East and the world within 2009-2018.

**Design/methodology/approach:** In this bibliometric study, the Scopus database was used. All papers published in the past ten years by researchers from Iran, the Middle East and the world in the field of internal medicine were included in the study. Data analysis and drawing of scientific maps were performed using Excel and VOS viewer software.

**Findings:** The number of scientific papers of Iranian researchers in the field of internal medicine has been ever-growing in the last ten years. In this respect, Tehran University of Medical Sciences is the most productive university in Iran with 4629 documents. The results of the visualization of the key thematic subject areas of internal medicine based on the keywords and terminologies of the title and abstracts showed that "epidemiological studies" were the most important subject areas of this field. A study of the contribution of countries in the world and the Middle East in scientific publications in the field of internal medicine showed that the United States was the world's top country with 438,392 documents and published 36.99% of the world's papers on internal medicine. It should be noted that amongst the Middle East countries, Turkey

and Iran have the highest share of scientific publications so that about 56 percent of Middle East scientific publications are published by these two countries.

**Results:** In the last decade, Iranian Journal of Internal Medicine has had a growing trend in terms of number of scientific publications. But most of the papers of Iranian researchers were published in the third and fourth quartiles. Accordingly, it is recommended that Iranian researchers prioritize the publication of articles in the first and second quarter journals and select these journals for publication.

**Practical implications:** Evaluating the process of scientific publications and identifying key thematic subject areas of internal medicine based on keywords and terms of the titles and abstracts can be useful for researchers in this field and help them understand research trends and locate hot spots and research gaps.

**Originality/Value:** Internal medicine are one of the important fields of medicine. This study provides an overview of the status of scientific publications of internal medicine at three national, regional and international levels.

**Keywords:** Bibliometric, Visualization, Internal Medicine, Scopus, Scientific Publications.

## **Introduction**

Science and scientific information are recognized as a key factor in today's world and for this reason the advanced economies of the world are largely based on scientific information (Wang and Zhao, 2018). Scientific and technological advances owe modern intellectual and scientific capital to the development and progress of countries (Mohammad Esmaeil, Riahi and Sohbatih, 2014). Measuring and evaluating science is a reality that has existed since the past as it has always been assumed that science can contribute to the health and well-being of the inhabitants of the earth. Accordingly, identifying the most influential authors, institutions, countries, and other factors associated with scientific publications can pave the way for systematic scientific collaboration and information exchange in various fields (Valinejadi, Vakili Mofrad and Amiri, 2012). Traditionally, most researchers tend to publish their work in journals, books, and conferences that are indexed in citation databases such as Web of Science or Scopus (Saber and

Ekhtiyari, 2019). Because one of the criteria for measuring a country's scientific publications is the number of documents indexed in these prestigious world-wide databases such as Web of Science and Scopus (Mardani, Mardani and Moghadam, 2011). Iranian scientific publications in these databases have dramatically increased in recent years. In 1989, Iran had only 26 articles on the Web of Science Web; however, in recent years this figure has increased dramatically (Ehteshami, 2012). Medical science is closely linked to the health of individuals in the community, and specialists in this field need more scientific communication and greater utilization of various information resources to enhance their level of competence and performance (Riahi and Sohbatiha, 2015). Due to the role and importance of scientific communication in achieving recent findings, the evaluation and assessment of scientific publications has always been the focus of bibliometric specialists (Valinejadi, Vakili Mofrad and Amiri, 2012). Bibliometrics is one of the most common tools for evaluating scientific activities (Lopez-Munoz et al., 2003). Bibliometrics is a research method (Laengle et al., 2017) and one of the most important quantitative approaches in the field of Library and Information Sciences (LIS) (Pareek, 2013). The term Bibliometrics as an interdisciplinary research field (Glanzel, 2003) first coined by Alan Pritchard in 1969 (Şenel & Demir, 2018; Mokhtari et al., 2019; Imani, et al., 2019). Since the advent of bibliometric term by Pritchard, various definitions have been proposed so far. Pritchard (1969) defined Bibliometric as: "bibliometrics is the application of mathematical and statistical methods to books and other media of communication."

Since the advent of the bibliometric, its indicators have been widely used to analyze and evaluate the scientific publications of various fields (Saber, Barkhan and Hamzehei, 2019). Evaluation of scientific publications and awareness of the status of scientific productions in a particular field helps researchers in that field become familiar with the scientific gaps in that regard (Yaminfirooz and Riahi, 2018). The field of medicine is no exception and is of paramount importance as it deals with the health, hygiene, prevention, care and treatment of individuals and communities (Mousavi Chalak, Yaminfirooz and Riahi, 2018). One of the medical fields is internal medicine. Internal medicine are diseases that are treated non-surgically and the patient must take medication or change their lifestyle and nutrition. Internal medicine include cardiovascular, respiratory, endocrine, digestive and liver diseases, rheumatism, kidney, blood and cancer (Khaledifar, 2014). This field of medicine deals with the prevention, diagnosis, and

treatment of adult diseases. Domestic specialists play a central role in teaching and research. Accordingly, this study has attempted to evaluate the scientific publications of Iranian researchers in the field of internal medicine in comparison with the countries of the region and the world during 2009 to 2018.

## **Literature Review**

Mousavi Chalak, Yaminfirooz and Riahi (2018), in a study entitled “Quantitative and Qualitative Evaluation of the Islamic Republic of Iran's Scientific Products Indexed in the Field of Nursing during 2000-2016”, showed that Iranian scientific publications in the field of care planning is among the top 10 countries in the world. Fereidouni Azizi has the highest contribution among Iranian authors with the publication of 125 papers. The results of this study showed that a significant portion of Iranian articles were of high quality and were published in quality journals. Ye et al (2018), in a study entitled "The publication trend of neuropathic pain in the world and China: a 20-year bibliometric analysis", showed that from 1998 to 2017, a total of 21,733 documents were published in the field of neurological pain in Worldwide, 9.394% of which belonged to Chinese authors. According to the results of this study, the US ranked first in terms of the number of documents in neuropathic pain, and China was second. The study showed that the trend of scientific production in the field of neurological pain increased rapidly from 1998 to 2017 and that the United States is the dominant country in this field. Riahi and Zare (2018) in a study entitled "Scientific Production of Iranian Researchers in the Field of Cancer and Comparison with Regional and World Countries (2006-2015) 2018" concluded that the trend of scientific publications of Iranian researchers in cancer during the recent years has been fairly acceptable; however, the papers had not been published in high quality, reputable journals. The study found that in recent years, Iranian researchers' scientific publications on cancer has grown by 25% annually, and researchers in industrialized and developed countries have been among the most important partners of Iranian specialists in joint science production.

In a bibliometric study entitled “Worldwide Productivity Research in the Field of Back Pain: A Bibliometric Analysis, Wang and Zhao (2018) showed that between 1995 and 2016, a total of 50,970 articles were published in the field of back pain. The United States had the highest number of articles (33%, 16818). Britain (8.99%, 4582%), Germany (7.6%, 3871), Canada

(7.09%, 3613), and Australia (6.01%, 3063) were next. Harvard University (1.8% and 917) had the highest scientific publications. Maher CG was the most active author and Spine was the most popular back pain journal.

In a study entitled “A bibliometric analysis of tuberculosis research, 2007–2016”, Nafade et al (2018) showed that the growth of scientific publications in the field of tuberculosis is 7.3% annually. The United States is the most active country with 18.4% of total scientific publications. India (9.7%), China (7.3%), Britain (6.5%) and South Africa (3.9%) were next. This study showed that in the past decade, scientific publications in the field of tuberculosis has increased, and the United States has maintained its dominance in science and investment in this field, being the dominant and pioneering country in this field.

Ozsoy and Demir (2017) analyzed 9089 documents in a bibliometric study entitled "The evolution of bariatric surgery publications and global productivity: a bibliometric analysis". The results of the study showed that the United States is the most leading and pioneering international organization in the field of most active organizations, authors, most citations, and international collaborations. Sweden was the most active country in producing scientific documents in the field of obesity in terms of numbers.

Boudry et al (2016) analyzed 62123 articles and 3368 journals in the field of ophthalmology in a study entitled "Trends and topics in eye disease research in PubMed from 2010 to 2014". Under Bradford's law, 19 journals were recognized as core journals. The results of this study showed that the two continents of Europe and Asia, the main continents, and the two countries of America and China, were the two main countries of scientific publications in the field of eye diseases. The results of the study carried out by Mardani, Mardani and Moghadam's (2011), entitled “A Survey of the Knowledge of Iranian Researchers on AIDS: Evidence from the Web of Science Database” showed that the scientific publication trend of Iranian researchers in the field of AIDS during the years 2000 to 2010 saw a 30 percent year-on-year upward trend. Tehran University of Medical Sciences accounts for one fifth of scientific publications among internal organizations. Most of the research done in Iran was on the subject of infectious diseases. Also, 35 percent of the journals in which Iranian researchers published their articles belonged to the United States.

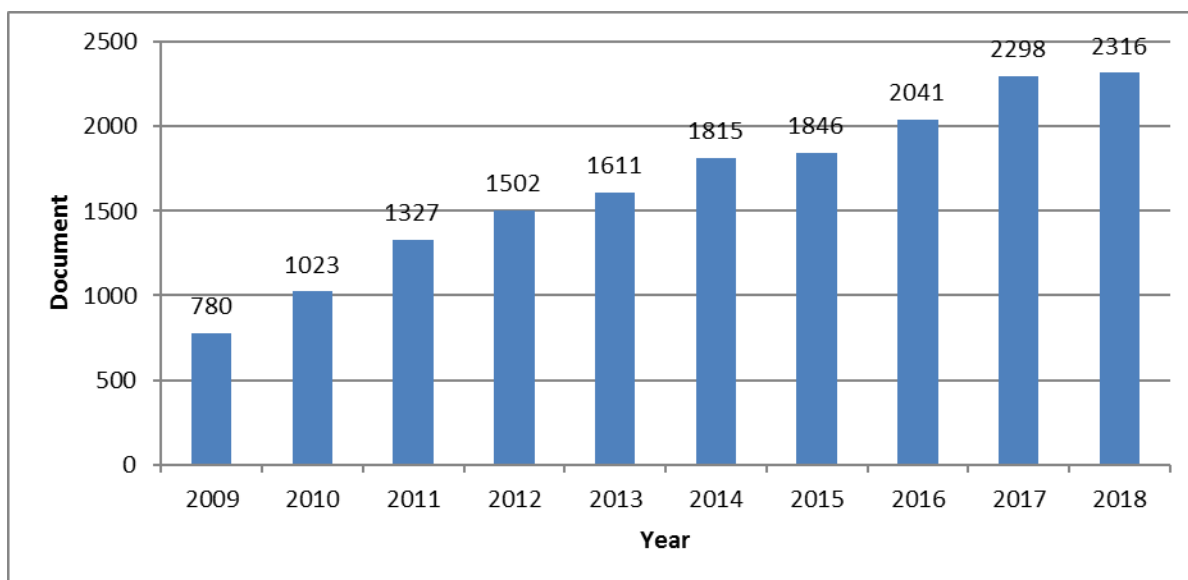
## **Methodology**

This study is a descriptive study using bibliometric indices. Prior to this, bibliometrics were used for the analysis of different medical fields and types of diseases such as AIDS (Mardani, Mardani and Moghadam, 2011), eye disease (Boudry et al., 2016), bariatric surgery (Ozsoy and Demir, 2017), tuberculosis (Nafade et al., 2018), back pain (Wang and Zhao, 2018), cancer (Riahi and Zare, 2018), neuropathic pain (Ye et al., 2018) and Nursing (Mousavi Chalak, Yaminfirooz and Riahi, 2018). In this study, bibliometric analysis was used to evaluate bibliometric analysis of Iranian researchers in the field of internal medicine and compare it with Middle Eastern countries and the world. The study interval was a ten-year period (2009–2018). Scopus database was used for data collection. Referring to Scopus ([www.scopus.com](http://www.scopus.com)) and Using Advanced Search and Selecting Internal Medicine Subject Areas, Iranian, Middle East and World Publications in Internal Medicine were extracted. In total, 16559 papers had been published by Iran, 77432 papers by Middle Eastern countries and 1185180 papers by researchers around the world in the field of internal medicine. Excel and VOS viewer software were used for data analysis. Investigating the trend of scientific publication, identification of top-notch institutions, studying the quality of journals, and determination of the contribution of Middle East and world countries to scientific publications in the field of internal medicine was performed using Excel software. Visualization of keywords, title terms, and abstracts was done using VOS viewer software, and important thematic subject areas of internal medicine were finally identified.

## **Results**

### **Scientific publication trend in Iranian internal medicine publications**

The distribution of Iranian scientific publications in the field of internal medicine from the beginning of 2009 until the end of 2018 is shown in Diagram 1, below.



**Diagram 1:** Scientific publication trend of Iran's internal medicine in the last ten years

Diagram 1 shows that Iranian scientific publications in the field of internal medicine have been consistently upward during the years under review, from 780 in 2009 to 2316 in 2018.

#### **Top Iranian universities and institutions for the publication of papers on internal medicine**

In Table 2, Iranian universities and science centers having published the largest number of papers and articles in the field of internal medicine are visible.



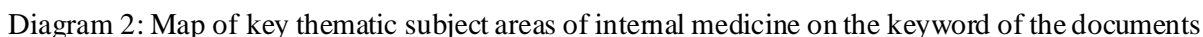
**Table 2:** Top Universities and Institutions in Internal Medicine in Iran for the Last 10 Years

NO	University	Documents	Rank
1	Tehran University of Medical Sciences	4629	1
2	Shahid Beheshti University of Medical Sciences	2301	2
3	Isfahan University of Medical Sciences	1838	3
4	Shiraz University of Medical Sciences	1316	4
5	Iran University of Medical Sciences	1282	5
6	Mashhad University of Medical Sciences	1121	6
7	Tabriz University of Medical Sciences	824	7
8	Mazandaran University of Medical Sciences	763	8
9	Baqiyatallah University of Medical Sciences	637	9
10	Babol University of Medical Sciences	599	10
11	Ahvaz Jundishapur University of Medical Sciences	577	11
12	Islamic Azad University	516	12
13	Kerman University of Medical Sciences	486	13
14	Tarbiat Modares University	463	14
15	Shahid Beheshti University of Medical Sciences, Research Institute for Endocrine Science	444	15
16	Kermanshah University of Medical Sciences	390	16
17	Shahid Sadoughi University of Medical Sciences	351	17
18	University of Tehran	336	18
19	Hamedan University of Medical Sciences	330	19
20	Zahedan University of Medical Sciences	265	20
21	University of Social Welfare and Rehabilitation Sciences	259	21
22	Kashan University of Medical Sciences and Health Services	255	22
23	Shahrekord University of Medical Sciences	255	22
24	Golestan University of Medical Sciences	254	23
25	Imam Reza Hospital	250	24
26	Pasteur Institute of Iran	242	25
27	Guilan University of Medical Sciences	242	25
28	Semnan University of Medical Sciences	233	26
29	Iranian Academic Center for Education, Culture and Research	228	27
30	Urmia University of Medical Sciences	227	28

The data in Table 2 indicate that Tehran University of Medical Sciences, with 4629 documents, is the most productive university in Iran in the field of internal medicine and ranks first among Iranian universities and scientific centers. Shahid Beheshti University of Medical Sciences, with 2301 documents, is Iran's second most productive university in the field of internal medicine. Third place belongs to Isfahan University of Medical Sciences. During the last ten years, the University has published 1838 documents in the field of internal medicine.

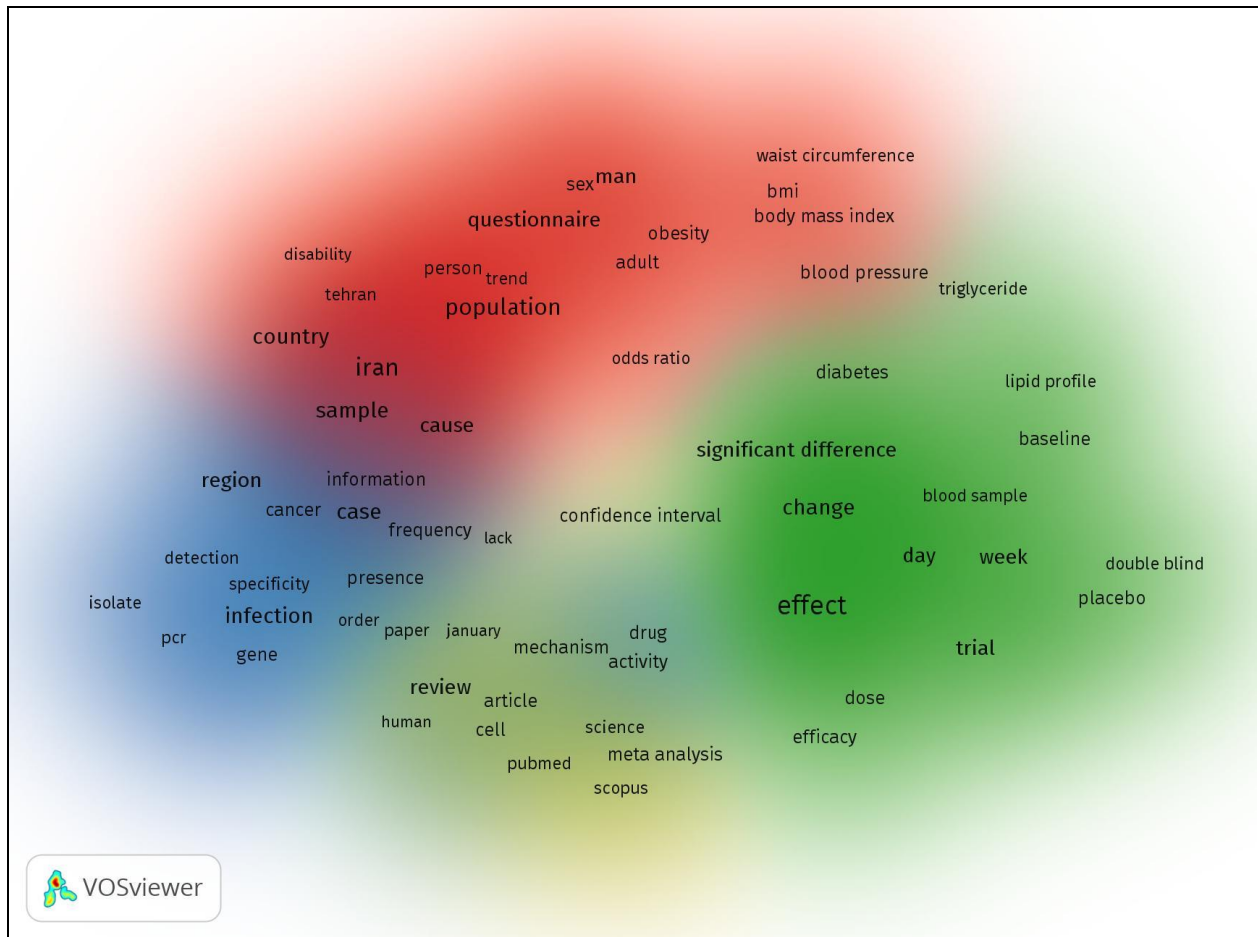
### **Important subject areas of internal Medicine on the keyword of the documents**

Keywords are an important part of articles and partly reflect the subject area of the articles. Accordingly, 16467 keywords were first extracted from Iranian scientific publications in the field of internal medicine. A threshold must be set for drawing a map of important subject areas. Therefore, different thresholds were tested. Finally, threshold 50 was identified according to visualization software. Then 162 keywords that having been repeated more than 50 times were mapped. In Diagram 2, a map of key thematic areas of Iran's internal medicine based on keywords is presented. As shown in Diagram 2, this map consists of four clusters. The first red cluster contains 51 keywords. The most appropriate title for this cluster is "Epidemiological Studies". The second cluster consists of 43 keywords and is blue. The cluster was named "metabolic studies" based on the keywords it contains. The third cluster in green consists of 39 keywords. This cluster was called "genetic studies". Finally, for the fourth cluster with 29 keywords, yellow, "Genetic Studies" was selected.



40792 important concepts were extracted from the titles and abstracts of this field to identify important thematic subject areas of Iran's internal medicine. A threshold must be set for the map of areas of importance. Therefore, different thresholds were tested. Finally, threshold 50 was identified according to visualization software. In total, 117 concepts had been used more than 50 times in the title and abstract of Iranian internal disease documents. These concepts were classified into four clusters of red (first cluster), blue (second cluster), green (third cluster) and yellow (fourth cluster). After studying the basic concepts of the first cluster, this cluster was called "epidemiological studies". For the second cluster, the title "pharmacological studies" was

recognized as appropriate. The third cluster was named "diagnostic studies". The fourth cluster was also called "Systematic Review Studies".



**Diagram 3:** Map of important thematic subject areas of internal medicine based on title and abstract

### Qualitative status of top journals publishing papers of internal medicine researchers

In Table 3, the journals that publish the largest number of scientific articles and papers by Iranian researchers and specialists in the field of internal medicine are visible. This table, in addition to the titles of journals, provides the number of documents, Cite Score, SJR, SNIP and Quartile.

**Table 3:** Top journals publishing Iranian articles in the field of internal medicine

NO	Journal	Documents	CiteScore (2017)	SJR (2017)	SNIP (2017)	Q	H Index
1	Journal of Isfahan Medical School	464	0.17	0.155	0.156	4	7
2	Caspian Journal of Internal Medicine	421	1.41	0.446	0.798	3	14
3	Journal of Research in Medical Sciences	368	1.52	0.593	0.871	2	26
4	Journal of Mazandaran University of Medical Sciences	356	0.45	0.258	0.324	3	11
5	Iranian Red Crescent Medical Journal	339	1.16	0.42	0.827	3	20
6	Archives of Iranian Medicine	254	1.28	0.61	0.904	2	39
7	Acta Medica Iranica	243	0.79	0.34	0.488	3	20
8	International Journal of Preventive Medicine	220	1.42	0.623	0.856	2	25
9	Iranian Journal of Kidney Diseases	208	1.07	0.481	0.687	3	24
10	Asian Pacific Journal of Cancer Prevention	197	1.46	0.616	0.587	2	59
11	Tehran University Medical Journal	195	0.21	0.139	0.165	4	8
12	Comparative Clinical Pathology	188	0.48	0.224	0.374	3	24
13	Iranian Journal of Public Health	181	0.85	0.33	0.678	3	24
14	Journal of Babol University of Medical Sciences	170	0.39	0.186	0.287	3	8
15	Hepatitis Monthly	169	1.92	0.785	0.841	2	28
16	Iranian Journal of Endocrinology and Metabolism	150	0.35	0.175	0.263	3	7
17	Koomesh	147	0.42	0.246	0.427	3	8
18	Jundishapur Journal of Microbiology	136	1.53	0.543	0.824	3	17
19	Medical Journal of The Islamic Republic of Iran	135	1.0	0.364	0.477	3	11
20	Tanaffos	126	0.65	0.269	0.435	3	10

As can be seen in Table 3, the Journal of Isfahan Medical School has published the largest number of Iranian scientific articles and papers in the field of internal medicine. Iranian researchers and experts have published 464 papers in the field of internal medicine in the past ten

years. The Caspian Journal of Internal Medicine, with the publication of 421 papers, is the second journal to publish articles of Iranian Internal Medicine Researchers. The top three journals belong to the Journal of Research in Medical Sciences. The journal has published 368 papers by Iranian researchers and experts. According to Table 3, the highest Cite Score and SJR are assigned to Hepatitis Monthly. It has a Cite Score of 1.92 and a SJR of 0.785. The highest SNIP is 0.904 and belongs to the Archives of Iranian Medicine.

#### **The contribution of Middle East countries in publications in the field of internal medicine**

Table 4 presents the number of scientific publications of the Middle East countries. In this table, the name of the country, the number of scientific records in the field of internal medicine, the share of each country in scientific output, and the rank of each country in the region can be simply observed.

**Table 4:** Scientific publications of countries in the field of internal medicine

NO	Country	Documents	% Of Total	Rank
1	Turkey	26770	34.57	1
2	Iran	16559	21.39	2
3	Israel	11683	15.09	3
4	Egypt	6613	8.54	4
5	Saudi Arabia	5681	7.34	5
6	Lebanon	2582	3.33	6
7	United Arab Emirates	1485	1.92	7
8	Qatar	1353	1.75	8
9	Jordan	1029	1.33	9
10	Cyprus	787	1.02	10
11	Kuwait	734	0.95	11
12	Oman	571	0.74	12
13	Iraq	521	0.67	13
14	Bahrain	397	0.51	14
15	Palestine	254	0.33	15
16	Syrian Arab Republic	222	0.29	16
17	Yemen	191	0.25	17
	Total	77432	100.00	

The data in Table 4 show that a total of 77,432 documents were published by Middle Eastern countries in the field of internal medicine. Among the Middle East countries, Turkey and Iran account for the largest share of scientific publications. In total, about 56 percent of Middle East scientific publications in the field of internal medicine is published by the two countries. 44% of scientific publications is also done by 15 other Middle Eastern countries (Israel, Egypt, Saudi Arabia, Lebanon, United Arab Emirates, Qatar, Jordan, Cyprus, Kuwait, Oman, Iraq, Bahrain, Palestine, Syrian Arab Republic, and Yemen). The Middle East rankings in the field of internal medicine indicate that Turkey is in the first place with 26,770 documents and accounts for 34.57% of total Middle East productions. Iran comes in second with 16559 documents. 21.39 percent of all Middle East production belongs to Iran. Israel is the third-largest country in the Middle East in the field of internal medicine, accounting for 15.09% of productions.

#### **Contribution of the world countries in publications in the field of internal medicine**

Table 5 presents the scientific output of the top 50 countries in the world in the field of internal medicine. Table 5 shows the number of scientific papers, the share of each country in the world scientific output, and the rank of each country in the world in addition to the name of each country. The results showed that a total of 1185180 scientific papers have been published by researchers worldwide in the field of internal medicine. The United States is the top country in the world with the release of 438392 papers. A total of 36.99 percent of the world's internal disease documents have been published by American researchers and specialists. The second country in the world in the field of internal medicine is the United Kingdom. The country accounted for 7.86% of the world's share with 93,143 documents. Third is Germany, which has published 77,727 documents in the field of internal medicine. Germany's share of the world's documents is 6.56%.

**Table 5:** Scientific publications of the top 50 countries in the world in the field of internal medicine

NO	Country	Documents	% Of Total	Rank	NO	Country	Documents	% Of Total	Rank
1	United States	438392	36.99	1	26	Norway	11673	0.98	26
2	United Kingdom	93143	7.86	2	27	Finland	9238	0.78	27
3	Germany	77727	6.56	3	28	Czech Republic	7623	0.64	28
4	Japan	71584	6.04	4	29	Portugal	7343	0.62	29
5	Italy	69952	5.90	5	30	South Africa	7313	0.62	30
6	Canada	62344	5.26	6	31	New Zealand	7199	0.61	31
7	China	59192	4.99	7	32	Ireland	7143	0.60	32
8	Netherlands	49367	4.17	8	33	Egypt	6613	0.56	33
9	Australia	49202	4.15	9	34	Mexico	6541	0.55	34
10	France	46171	3.90	10	35	Singapore	6306	0.53	35
11	South Korea	45303	3.82	11	36	Russian Federation	5964	0.50	36
12	Spain	42433	3.58	12	37	Thailand	5762	0.49	37
13	Switzerland	26840	2.26	13	38	Hong Kong	5734	0.48	38
14	Turkey	26770	2.26	14	39	Saudi Arabia	5681	0.48	39
15	Brazil	25242	2.13	15	40	Argentina	4910	0.41	40
16	Sweden	24934	2.10	16	41	Hungary	4762	0.40	41
17	Taiwan	24837	2.10	17	42	Malaysia	4566	0.39	42
18	India	23932	2.02	18	43	Romania	4221	0.36	43
19	Belgium	18484	1.56	19	44	Pakistan	3789	0.32	44
20	Denmark	17887	1.51	20	45	Colombia	3554	0.30	45
21	Poland	16947	1.43	21	46	Chile	3532	0.30	46
22	Iran	16559	1.40	22	47	Croatia	3522	0.30	47
23	Greece	15834	1.34	23	48	Serbia	3286	0.28	48
24	Austria	15757	1.33	24	49	Nigeria	2704	0.23	49
25	Israel	11683	0.99	25	50	Lebanon	2582	0.22	50



A survey of the top 50 countries in the Middle East revealed that out of the 17 Middle East countries, only 6 ones i.e. Turkey, Iran, Israel, Egypt, Saudi Arabia, and Lebanon were among the top 50, with 11 being above 50 and are not on this list. Thus, Table 6 presents the regional and global rankings of all Middle Eastern countries. This table shows the status of the scientific production of these countries in the field of internal medicine and their rank in the Middle East and the world.

**Table 6:** The status of Middle Eastern countries in the region and in the world

NO	Country	Documents	Rank in Middle east	Rank in World
1	Turkey	26770	1	14
2	Iran	16559	2	22
3	Israel	11683	3	25
4	Egypt	6613	4	33
5	Saudi Arabia	5681	5	39
6	Lebanon	2582	6	50
7	United Arab Emirates	1485	7	55
8	Qatar	1353	8	57
9	Jordan	1029	9	65
10	Cyprus	787	10	76
11	Kuwait	734	11	78
12	Oman	571	12	83
13	Iraq	521	13	86
14	Bahrain	397	14	92
15	Palestine	254	15	104
16	Syrian Arab Republic	222	16	109
17	Yemen	191	17	114

The results of Table 6 show that Turkey has the best global rank in the Middle East. Turkey is the 14th country in the field of internal medicine in the world. On the other hand, Iran is in the twenty-second place in the world and Israel in the twenty-fifth place in the world. In general, the Middle East is not very well positioned in the world in the field of internal medicine and, as

mentioned earlier, only six countries that is Turkey, Iran, Israel, Egypt, Saudi Arabia and Lebanon are among the top 50 countries.

### **Discussion and conclusion**

Today, research is regarded as one of the most fundamental infrastructures for the development and progress of countries, and that targeted research is being done to meet the needs of societies. The significance of scientific publications and their undeniable role in sustainable development is to the extent that a bulk of developed countries spend large amounts of their national funds on research development and on research institutions (Mousavi Chalak, Yaminfirooz and Riahi, 2018).

Scientific publication is carried out in numerous formats, with their most prominent headlines and indexes indexed in international databases such as Web of Science and Scopus (Riahi et al., 2015). Evaluating the performance of scientific publications of a particular field in international databases can be a way to understand the underlying shortcomings of the subject area. Medical knowledge is linked to people's health and lives, so weakness in this area can endanger the health and lives of people. Internal medicine is one of the important areas of medicine evaluated in the study. The results showed that the number of scientific papers of Iranian researchers in the field of internal medicine experienced an increasing trend during 2009 to 2018. This finding is in line with the results of the studies conducted by Riahi and Zare (2018) and Mardani, Mardani and Moghadam (2011). The results of their studies showed that the number of scientific publications of Iranian researchers in the fields of cancer and AIDS has increased in recent years. Based on this result, it can be said that the field of internal medicine in Iran, like other subject areas, has had a growing trend in terms of number of scientific publications. One of the reasons behind such an increase in the number of scientific papers by Iranian researchers is the increase in the number of Iranian journals indexed on Scopus. In a study entitled "Qualitative and Quantitative Study of Iranian Journal of Medicine in the Scopus Database", Mousavi Chalak, Riahi and Zare (2018) showed that the number of Iranian medical journals indexed in Scopus increased from 29 one in 2009 to 78 in 2015. A survey of the most influential institutes showed that Tehran University of Medical Sciences, Shahid Beheshti University of Medical Sciences and Isfahan University of Medical Sciences were ranked first to third, respectively in terms of the number of

scientific papers in the field of internal medicine. In the study performed by Mousavi Chalak, Yaminfirooz and Riahi (2018), the three universities were the pioneers in the number of scientific publications in nursing in Iran. This result may indicate sufficient attention of these universities to scientific publications in various medical fields, especially in the field of internal medicine and nursing. Accordingly, it is recommended that researchers from other medical universities in Iran use the experiences of Tehran University of Medical Sciences, Shahid Beheshti University of Medical Sciences, and Isfahan University of Medical Sciences to collaborate with them in adverse medical fields.

The results of the visualization of the key subject areas of internal medicine in Iran based on keywords and terms indicate that "Epidemiological studies" are the most important subject areas of internal medicine and numerous scientific documents have been published and indexed in the Scopus database. Therefore, it can be said that in Iran, "epidemiological studies" have received more attention from internal disease researchers than other subject areas.

The study of the qualitative status of the top journals publishing articles by Iranian Internal Medicine Researchers showed that although Iranian researchers' articles in the field of Internal Medicine have improved slightly in 2009 to 2018, most articles have been published in low-quartile journals (Q4 and Q3) and no Q1 journal is among the top and most prolific ones. Riahi and Zare (2018) showed in their study that most of the journals publishing the papers by Iranian researchers in the field of cancer are Q4 and Q3 journals. Due to the poor quality of journals published by Iranian researchers in the field of internal medicine, it is recommended that Iranian researchers prioritize the publication of articles in Q1 and Q2 journals and select these journals for publication. Professionals in the field of Library and Information Sciences can be good information advisors for selecting the appropriate journals for the publication of internal disease research papers.

An analysis of the contribution of the Middle East countries in internal disease publications showed that Turkey and Iran had the highest share of scientific output among these countries. In total, about 56 percent of the Middle East's scientific publications on internal medicine had been published by the two countries. In the study by Riahi and Zare (2018) in the field of cancer, both Turkey and Iran were in charge of scientific publications in the field of cancer. This could be due

to their being a pioneer in scientific publications and the high importance of the medical field in countries. The study of the contribution of world countries in the scientific publications in the field of internal medicine revealed that the United States, United Kingdom, and Germany were the three leading countries in the field of internal medicine. A study by Wang and Zhao (2018) in the area of back pain also pioneered the three countries mentioned. In addition, studies by Mousavi Chalak Yaminfirooz and Riahi (2018) and Riahi and Zare (2018) pointed to the leadership of the United States and the United Kingdom in scientific publications in the fields of nursing and cancer. Eventually, given that the United States and the United Kingdom are pioneers in most subject areas, researchers from other countries, especially developing countries, are suggested to prioritize scientific cooperation with researchers in these countries. Undoubtedly, scientific collaborations with leading-edge researchers will enhance the quality of scientific publications in developing countries.

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